

WHAT IS CLAIMED IS:

1. A vapor deposition apparatus for coating an item, said apparatus having a cleanroom side that is accessible from inside a cleanroom and a service side that is not accessible from inside the cleanroom, said apparatus comprising

a vaporizer for vaporizing solid coating material,

5 a pyrolysis furnace for heating the vaporized coating material to form a pyrolyzed gaseous coating material, and

a deposition enclosure defining a deposition chamber for receiving an item to be coated, said deposition enclosure having an inlet for flow of pyrolyzed gaseous coating material into the deposition chamber, an outlet for flow of pyrolyzed gaseous coating material from the deposition chamber, an access door for accessing the deposition chamber from the cleanroom side of the apparatus, and a service door for accessing the deposition chamber from the service side of the apparatus.

2. The apparatus set forth in claim 1 further comprising a filter connected to said outlet for receiving gaseous coating material discharged from the deposition chamber, said filter being accessible from the service side of the apparatus.

3. The apparatus set forth in claim 1 further comprising a shroud at least partially surrounding the access door to allow isolated access to the deposition chamber from the cleanroom.

4. The apparatus set forth in claim 3 wherein said shroud is located in or adjacent an opening in the wall of the cleanroom.

5. The apparatus set forth in claim 4 wherein said access door is accessible from within the cleanroom through said opening in the wall of the cleanroom.

6. The apparatus set forth in claim 5 wherein said shroud comprises a platform for supporting said items outside of the deposition enclosure.

7. The apparatus set forth in claim 1 further comprising a control mechanism comprising at least two local control stations for controlling operation of the apparatus.

8. The apparatus set forth in claim 7 wherein said at least two local control stations comprise a first local control station accessible from outside of the cleanroom and a second local control station accessible from within the cleanroom.

9. The apparatus set forth in claim 7 wherein said control mechanism comprises an indicator for displaying a status of the apparatus, said indicator being visible from inside the cleanroom.

10. A deposition enclosure for use in a vapor deposition apparatus having a cleanroom side and a service side, said deposition enclosure comprising
a structure defining a deposition chamber for receiving an item to be coated,
an inlet for flow of coating material into the deposition chamber,
an outlet for flow of coating material out of the deposition chamber,
at least two doors attached to said structure to allow access to said deposition chamber, at least one of said doors allowing access to the deposition chamber from the cleanroom side of the apparatus for placement of an item to be coated in the deposition chamber and for removal of a coated item from the deposition chamber.

11. The deposition enclosure set forth in claim 10 wherein said at least two doors comprise an access door and a service door, said access door being configured to allow access to the deposition chamber from inside a cleanroom and said service door being configured to allow access to the deposition chamber from outside the cleanroom.

12. The deposition enclosure set forth in claim 11 further comprising a shroud at least partially surrounding said access door to allow isolated access to the access door from inside the cleanroom.

13. The deposition enclosure set forth in claim 11 wherein said service door is connected to said structure on the service side of the apparatus.

14. The deposition enclosure set forth in claim 11 wherein said access door is connected to said structure on the cleanroom side of the apparatus.

15. The deposition enclosure set forth in claim 11 wherein said access door and said service door are attached to said structure by hinges.

16. The deposition enclosure set forth in claim 11 wherein said access door comprises a window for viewing the deposition chamber from inside the cleanroom.

17. The deposition enclosure set forth in claim 11 wherein said service door comprises a window for viewing the deposition chamber from outside the cleanroom.

18. A process for coating an item in a cleanroom by vapor deposition comprising providing a vapor deposition apparatus having a cleanroom side accessible from a

cleanroom and a service side accessible from outside the cleanroom,

loading the item into the vapor deposition apparatus by accessing the cleanroom
5 side of the apparatus from inside the cleanroom,

loading solid coating material into the vapor deposition apparatus,

operating said vapor deposition apparatus to heat said solid material to form a
gaseous coating material and to condense said gaseous coating material to form a coating
on the item, and

10 removing the item from the vapor deposition apparatus by accessing the cleanroom
side of the apparatus from inside the cleanroom.

19. The method set forth in claim 18 wherein said item loading step comprises
opening an access door of the vapor deposition apparatus to place said item in a deposition
chamber of the apparatus.

20. The method set forth in claim 18 wherein said removing the item step
comprises opening an access door of the vapor deposition apparatus to remove the item
from a deposition chamber of the apparatus.

21. The method as set forth in claim 18 wherein said item is selected from a group
of items consisting of: a medical device; a MEMS device; an optical device; and a
electronic circuit board.

22. The method as set forth in claim 18 wherein said operating said vapor
deposition apparatus step comprises accessing a local control station from within the
cleanroom to initiate operation of the apparatus.

23. A vapor deposition apparatus for coating an item, said apparatus being adapted to be positioned outside of a cleanroom and being accessible from inside the cleanroom through an opening in a cleanroom wall, said apparatus comprising

a vaporizer for vaporizing solid coating material,

5 a pyrolysis furnace for heating the vaporized coating material to form a pyrolyzed gaseous coating material,

a deposition enclosure defining a deposition chamber for receiving an item to be coated, said deposition enclosure having an inlet for flow of pyrolyzed gaseous coating material into the deposition chamber, an outlet for flow of pyrolyzed gaseous coating material from the deposition chamber, and at least two doors for accessing the deposition chamber, and

10 a shroud at least partially surrounding one of said at least two doors to allow isolated access to the deposition chamber from inside the cleanroom.

24. The apparatus set forth in claim 23 wherein said shroud is at least partially transparent to allow viewing of the apparatus from within the cleanroom.

25. The apparatus set forth in claim 23 wherein said shroud comprises a first upper part and a second upper part comprising a transparent material to allow viewing of the apparatus from within the cleanroom.

26. The apparatus set forth in claim 25 wherein said transparent material comprises polycarbonate.

27. The apparatus as set forth in claim 25 wherein said shroud comprises a lower part having a platform for supporting said items outside the deposition enclosure.

28. The apparatus set forth in claim 27 wherein said lower part comprises a fastening flange adapted for connection to said first and second upper parts.

29. The apparatus set forth in claim 23 wherein said shroud comprises a wall having an opening for receiving the deposition enclosure.

30. The apparatus set forth in claim 23 wherein said at least two doors comprise an access door and a service door, said access door being configured to allow access to the deposition chamber from inside the cleanroom and said service door being configured to allow access to the deposition chamber from outside of the cleanroom.